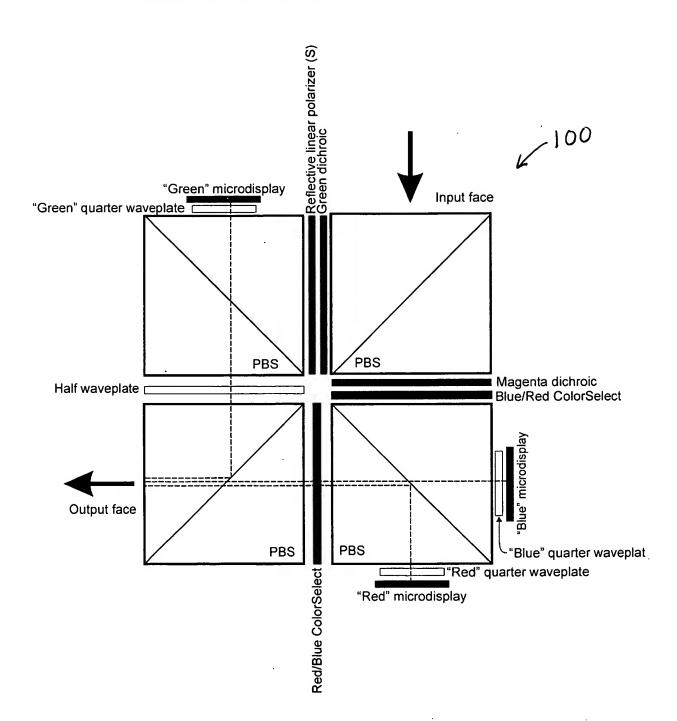
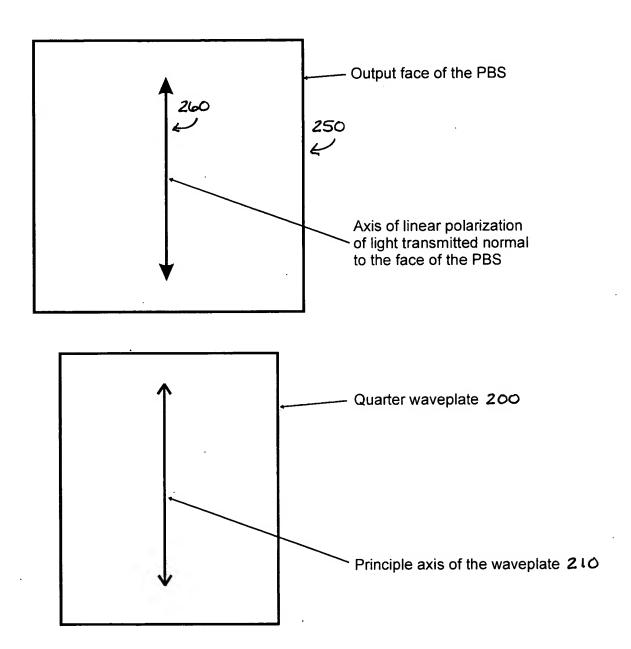
### FIGURE #1: A SIMPLIFIED LCOS BASED KERNEL

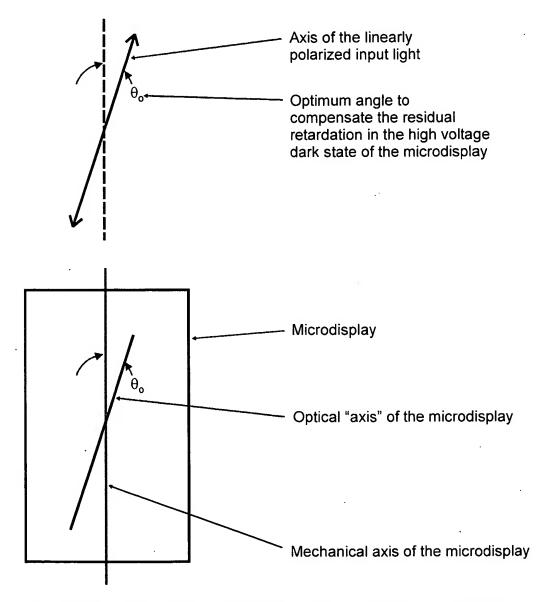


# FIGURE #2: OPTIMUM ORIENTATION OF THE QUARTER WAVEPLATE TO ACCOMPLISH SKEW RAY COMPENSATION



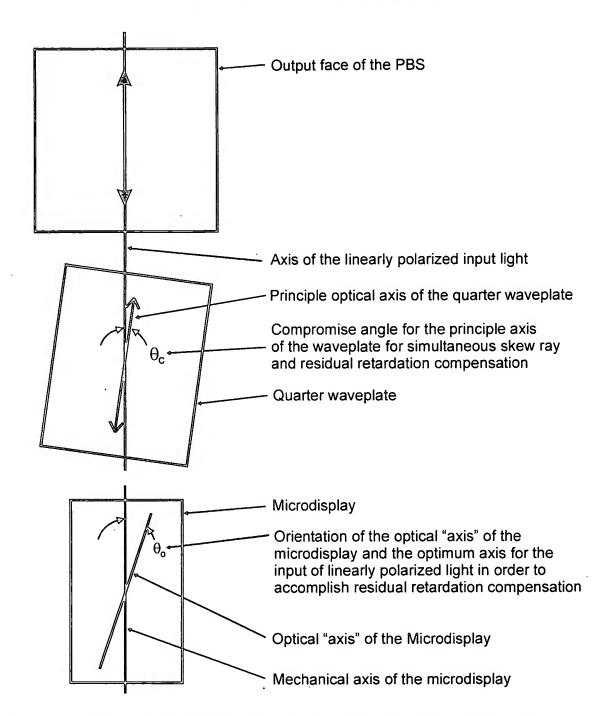
The optimum angle between the axis of linear polarization of the light transmitted normal to the face of the PBS and the principle optical axis of the waveplate is zero degrees

## FIGURE #3: OPTIMUM ORIENTATION TO COMPENSATE RESIDUAL RETARDATION IN THE DARK STATE OF THE MICRODISPLAY



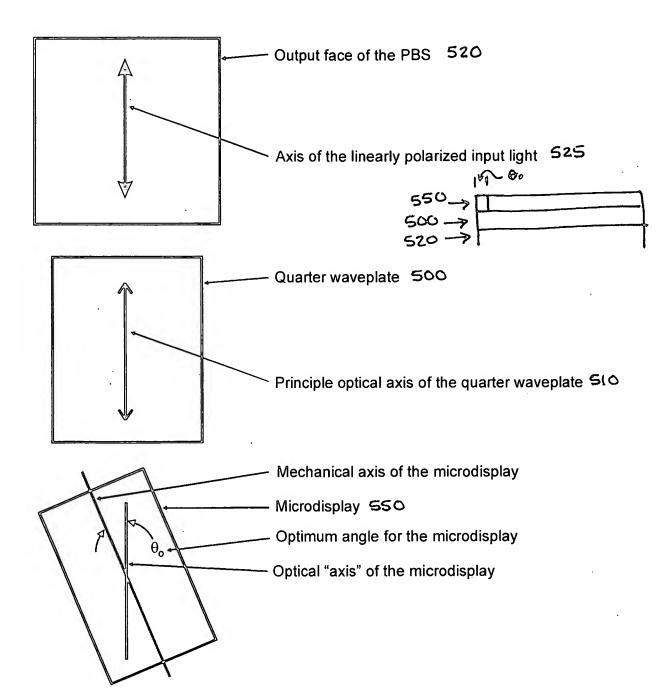
Optimum compensation of the residual retardation in the microdisplay occurs when the angle between the axis of linearly polarized input light and the optical "axis" of the microdisplay is 0 degrees. This direction is oriented at an angle of  $\theta_{\rm o}$  with respect to the mechanical package of the microdisplay.

### FIGURE #4: COMPENSATION METHOD USED IN CONVENTIONAL LCOS KERNELS



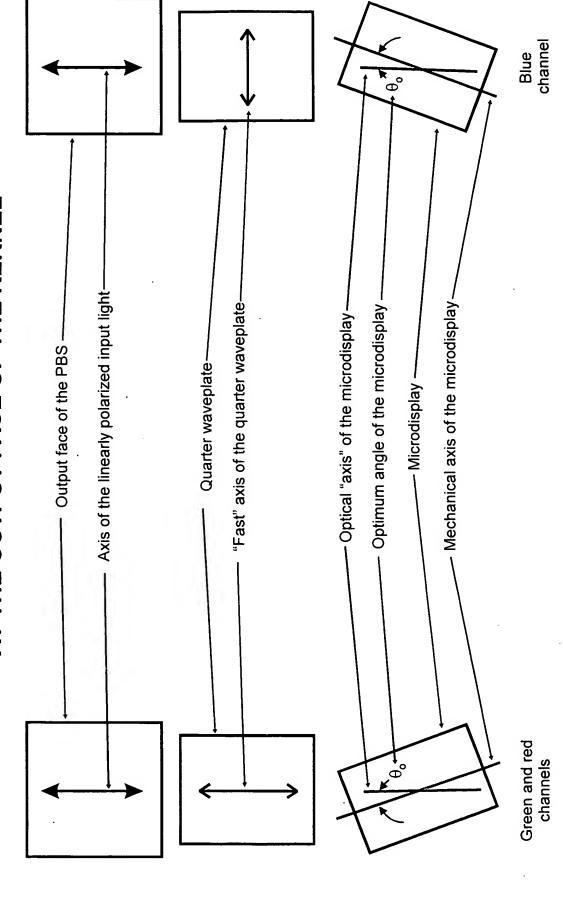
The angle chosen for the orientation of a principle optical axis of the waveplate  $\theta_c$  is a compromise between the optimum angle required for skew ray compensation (zero degrees and the angle required for optimum residual retardation compensation  $\theta_c$ .

### FIGURE #5: THE FIRST DISCLOSED COMPENSATION METHOD FOR LCOS KERNELS

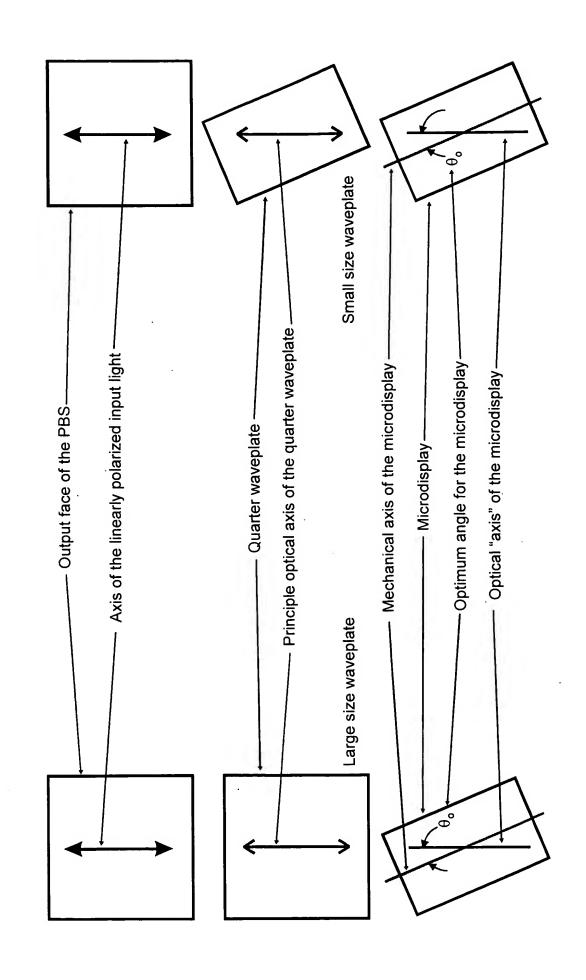


The angle chosen for the orientation of a principle optical axis of the waveplate is parallel to the linearly polarized light output by the PBS and thus optimum for skew ray compensation. The microdisplay has been rotated such that the linearly polarized input light is incident at the optimum angle  $\theta_0$  for residual retardation compensation.

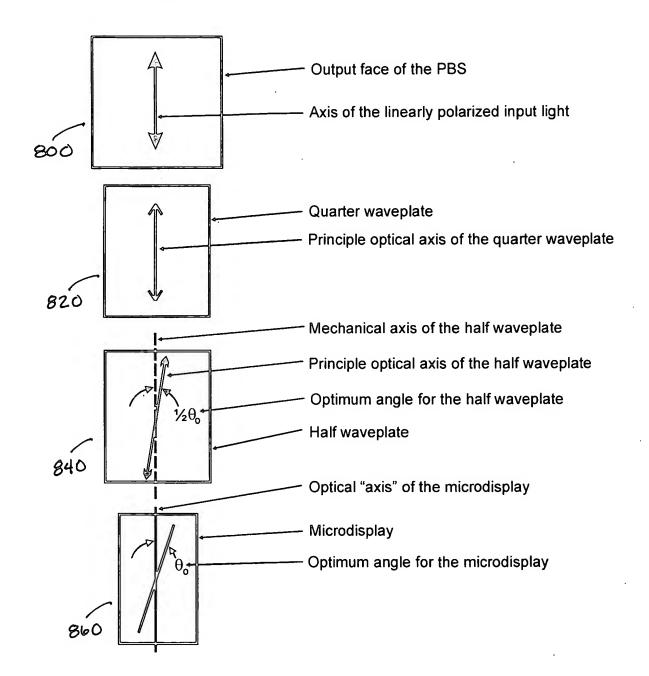
# FIGURE #6: MEANS TO ALLOW THE MICRODISPLAYS IN ALL THREE CHANNELS TO ROTATE IN THE SAME DIRECTION AS OBSERVED AT THE OUTPUT FACE OF THE KERNEL



# FIGURE #7: OPTIMIZING THE WAVEPLATE FOR THE FIRST COMPENSATION METHOD



### FIGURE #8: THE SECOND DISCLOSED COMPENSATION METHOD FOR LCOS KERNELS



The angle chosen for the orientation of a principle optical axis of the quarter waveplate is parallel to the linearly polarized light output by the PBS and optimum for skew ray compensation. A optical axis of the half waveplate is oriented at  $\frac{1}{2}\theta_o$  so as to rotate the axi of linear polarization to  $\theta_o$ . At this angle the linearly polarized light input to the microdisplay is at the angle required for optimum residual retardation compensation.

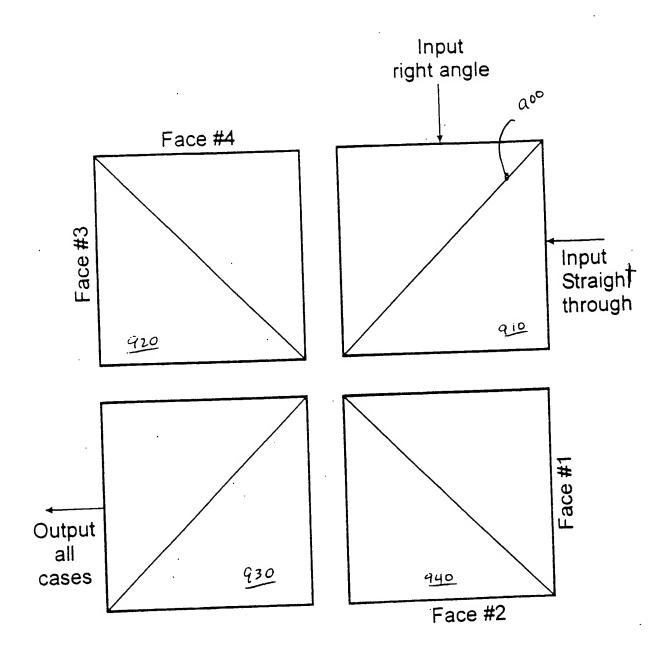


FIG. 10

### A SUMMARY OF KERNEL CONFIGI ATIONS

CONFIGURATION NUMBER	INPUT ORIENTATION	FACE 1	FACE 2	FACE 3	FACE 4
1	Right angle	Blue	Red	Green	•
2	Right angle	Blue	Red		Green
3	i Right angle	Blue	Green	Red	-
4	Right angle	Blue	Green		Red
5	Right angle	Blue		Red I	Green
6	Right angle	Blue		Green	Red
7	Right angle	Red	Blue	Green	
3	Right angle	Red	Blue		Green
9	Right angle	Red	Green	Blue	•
10	Right angle	Red	Green		Blue
11	Right angle	Red		Green	Blue
12	Right angle	Red	-	Blue	Green
13	Right angle	Green	Red	Bluc	•
14	Right angle	Green	Red	•	Bluc
15	Right angle	Green	Blue	Red	
16	Right angle	Green	Blue		Red
17	Right angle	Green		Red	Blue
18	Right angle	Green		Blue	Red
19	Right angle	•	Blue	Red	Green
20	Right angle	<del></del>	Blue	Green	Red
	Right angle		Red	Blue	Green
21 22	Right angle		Red	Green	Blue
23	Right angle	-	Green	Blue	· Red
23 24	Right angle	<del>                                     </del>	Green	Red	Blue
25	Straight through	Blue	Red	Green	•
	Straight through	Blue	Red		Green
26	Straight through	Blue	Green	Red	• •
27	Straight through	Blue	Green		Red
28	Straight through	Blue		Red	Green
		Blue	<b>—</b>	Green	Red
30	Straight through Straight through	Red	Blue	Green	
31	Straight through	Red	Blue		Green
32	Straight through	Red	Green	Blue	
33	Straight through	Red	Green	- :	Blue
34	Straight through	Red		Green	Blue
35	Straight through	Red		Blue	Green
36	Straight through	Green	Red	Blue	
37	Straight through	Green	Red		Blue
38	Straight through	Green	Blue	Red	
39	Straight through	Green	Blue		Red
40		Green	•	Red	Blue
41	Straight through	Green		Blue	Red
42	Straight through	·	Blue	Red	Green
43	Straight through	<del> </del>	Blue	Green	Red
44	Straight through	<del>                                     </del>	Red	Blue	Green
45	Straight through	<del> </del>	Red	Green	Blue
46	Straight through	<del> </del>	Green	Blue	Red
47	Straight through Straight through	-	Green	Red	Blue